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S E R V I C E

## TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

21

|  |              |
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| Filing Date                              | 9-19-2003    |
| First Named Inventor                     | Sherlock     |
| Art Unit                                 | 2632         |
| Examiner Name                            | Nguyen       |
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**ENCLOSURES (Check all that apply)**

|  |   |   |
|--|---|---|
| <input type="checkbox"/> Fee Transmittal Form                              | <input type="checkbox"/> Drawing(s)                                       | <input type="checkbox"/> After Allowance Communication to TC                            |
| <input type="checkbox"/> Fee Attached                                      | <input type="checkbox"/> Licensing-related Papers                         | <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences     |
| <input type="checkbox"/> Amendment/Reply                                   | <input type="checkbox"/> Petition   | <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) |
| <input type="checkbox"/> After Final                                       | <input type="checkbox"/> Petition to Convert to a Provisional Application | <input type="checkbox"/> Proprietary Information  |
| <input type="checkbox"/> Affidavits/declaration(s)                         | <input type="checkbox"/> Power of Attorney, Revocation                    | <input type="checkbox"/> Status Letter  |
| <input type="checkbox"/> Extension of Time Request                         | <input type="checkbox"/> Change of Correspondence Address                 | <input type="checkbox"/> Other Enclosure(s) (please identify below):                    |
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| Remarks  |   |   |

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

|              |                        |          |        |
|--------------|------------------------|----------|--------|
| Firm Name    | Standley Law Group LLP |          |        |
| Signature    |                        |          |        |
| Printed name | Michael Stonebrook     |          |        |
| Date         | 3-10-05                | Reg. No. | 53,851 |

**CERTIFICATE OF TRANSMISSION/MAILING**

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

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| Signature             |                |      |           |
| Typed or printed name | Jody K. Prince | Date | 3-10-2005 |

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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I HEREBY CERTIFY that annexed hereto is a true copy of the documents filed in connection with the following patent application:

Application No. S2002/0758

Date of Filing 20th September 2002

Applicant Charlie Sherlock, an Irish Citizen of 6 Luttrellstown Grove, Castleknock, Dublin 15, Ireland

Dated this 16 day of September 2003.

**CERTIFIED COPY OF  
PRIORITY DOCUMENT**

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APPLICATION NO. 600758

**S020758**

**REQUEST FOR THE GRANT OF A PATENT  
PATENTS ACT, 1992**

The Applicant named herein hereby request

the grant of a patent under Part II of the Act

the grant of a short-term patent under Part III of the Act

on the basis of the information furnished hereunder.

**1. APPLICANT**

Name **CHARLIE SHERLOCK**

Address

**6 Luttrellstown Grove  
Castleknock  
Dublin 15  
Ireland**

Description/Nationality

**An Irish citizen**

**2. TITLE OF INVENTION**

"An Active Security System"

**3. DECLARATION OF PRIORITY ON BASIS OF PREVIOUSLY FILED  
APPLICATION FOR SAME INVENTION (SECTIONS 25 & 26)**

Previous filing date

Country in or for  
Which filed

Filing No.

**None**

**4. IDENTIFICATION OF INVENTOR(S)**

Name(s) of person(s) believed by Applicant(s) to be the inventor(s)

1. Charlie Sherlock

Address

1. 6 Luttrellstown Grove, Castleknock, Dublin 15, Ireland

**5. STATEMENT OF RIGHT TO BE GRANTED A PATENT (SECTION 17(2)(B))**

By virtue of the Applicant being the Inventor.

**Contd./...**

**ITEMS ACCOMPANYING THIS REQUEST - TICK AS APPROPRIATE**

- (i)  prescribed filing fee (€60.00)
- (ii)  specification containing a description and claims
- specification containing a description only
- Drawings referred to in description or claims
- (iii)  An abstract
- (iv)  Copy of previous application(s) whose priority is claimed
- (v)  Translation of previous application whose priority is claimed
- (vi)  Authorisation of Agent (this may be given at 8 below if this Request is signed by the Applicant(s))

**7. DIVISIONAL APPLICATION**

The following information is applicable to the present application which is made under Section 24 -

Earlier Application No:  
Filing Date:

**8. AGENT**

The following is authorised to act as agent in all proceedings connected with the obtaining of a Patent to which this request relates and in relation to any patent granted -

**Name**

F. R. KELLY & CO.

**Address**

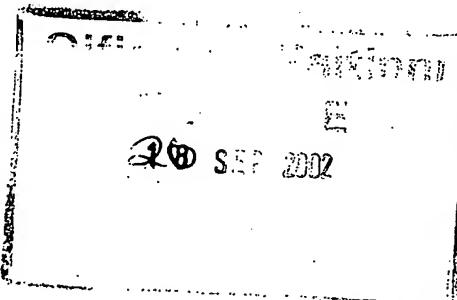
at their address as recorded for the time being in the Register of Patent Agents

**9. ADDRESS FOR SERVICE (IF DIFFERENT FROM THAT AT 8)**

CHARLIE SHERLOCK  
F. R. KELLY & CO.

By:   
EXECUTIVE

Date: September 20, 2002



## AN ACTIVE SECURITY SYSTEM

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The present invention concerns an active security system, and in particular a security system which 5 remains active upon the entry of an authorised individual, the security system being capable of discriminating between authorised and unauthorised individuals, and operable to trigger and alarm upon the detection of an unauthorised individual.

10

Despite significant technological advances in recent years, domestic and business security systems have retained the same operating principles over the past decade and a half. In a typical domestic security 15 system, all entry points are monitored by means of magnetic, vibration, or a combination of these sensors. The sensors are wired or radio linked to a central control unit. In addition, the system may be provided with passive infrared (PIR) or ultrasonic sensors 20 deployed within the property or premises, which offer an additional level of protection. Such sensors detect movement within the particular area covered by the sensor. Different locations within the property will have different zones assigned thereto, for example zone 25 1 may be downstairs, while zone 2 may be upstairs. This allows the user some control over which parts of the property are alarmed at any given time. User control is generally facilitated by a standard key pad interface, which is normally located away from the main 30 control unit at the main entrance point to the property or premises. Panic alarms, battery back up, trip switches, fire sensors, video monitoring and dial up links to a centralised security monitoring centre all

form constituent parts of standard modern alarm systems..

However, there are a number of significant problems  
5 with such alarm systems of the prior art. Current systems rely on either the opening or forced entry through an entrance of the property in order to detect an intruder. Present systems will not alert the user if someone enters the property through an open window.  
10 or door. In addition, unless the alarm system is manually switched on, and armed for a particular zone, it is completely useless. Furthermore, when a monitoring station is employed, the alarm system will only dial same if an alarm is triggered, and is thus  
15 inoperable once the occupant returns to the premises and disables the alarm. Such monitoring stations are also typically connected to the alarm system by a standard fixed or land line connection, which is easily disabled.

20 Current security systems do not track the movement of people within a property. This severely limits the capability of the system to detect unauthorised entry into the property, and also means that critical  
25 information cannot be passed on, for example informing rescue authorities as to the number and position of people within a property when a fire is detected.

The present invention seeks to overcome the problems of  
30 the prior art by providing an alarm system which is continually active, as will be described in detail hereinafter.

The present invention therefore provides an active security system for detecting the presence of an intruder in a premises, the system comprising a plurality of sensors; a processor in operative association with the sensors, and adapted to track the location of any individual within the premises, by means of the plurality of sensors; identifying means operable to alert the processor to the presence of an authorised individual and to signal the processor to continually track said authorised individual within the premises, whereby access by an unauthorised individual is immediately detected, and a suitable alarm signal triggered by the processor.

15 Preferably, where the premises comprises one or more entry points providing access from the exterior, each entry point has a sensor associated therewith which is operable to detect whether a door/window at the entry point has been opened, whereby the processor will trigger the alarm unless an authorised person is detected within a predetermined range of the access point.

20 Preferably, where the door/window of an access point is opened by authorised individual, the processor is operable to trigger the alarm upon detection of access of an unauthorised individual through said open access point.

25 Preferably, where the premises includes a number of rooms connected by interior doors, each interior door has a sensor associated therewith which is operable to detect when the door has been opened or closed, in

order to aid in tracking individuals through the premises.

Preferably, the plurality of sensors comprise heat  
5 and/or motion sensors, in addition to contact and/or vibration sensors in operative association with the door/window at any access point.

Preferably, the system comprises one or more video  
10 cameras in operative association with the processor, such that on detection of an unauthorised individual, the processor activates the video camera such as to produce a video and/or audio recording of the unauthorised individual.

15 Preferably, the system comprises one or more signal generators in operative association with the processor, such that a signal can be provided to any authorised individual on the premises, detailing the location  
20 and/or number of unauthorised individuals in the premises.

Preferably, the system is connectable to an external monitoring station to which various information can be  
25 transmitted from the security system.

The present invention will now be described with reference to the accompanying drawings, in which:

30 Figure 1 illustrates a schematic view of the ground floor of a house to which the security system of the present invention has been installed; and

Figure 2 illustrates a schematic view of the architecture of the system of the present invention.

Referring now to the accompanying drawings, there is  
5 illustrated a security system, generally indicated as  
10, adapted to continually monitor a premises 12 for  
the presence of unauthorised individuals such as  
intruders or the like. The system 10 comprises a  
plurality of sensors of varying function, as will be  
10 described in detail hereinafter, and a processor 14  
which each of the sensors are in communication with,  
either by remote or radio/IR connection, or any other  
suitable means. The system 10 is designed to  
constantly monitor the premises 12 for the presence of  
15 an intruder or an authorised individual, even when an  
authorised individual is present on the premises 12.

For the purposes of the following description, the  
premises 12, as illustrated in Figure 1, is represented  
20 by the ground floor of a two storey domestic property,  
although it will of course be appreciated that the  
premises 12 may be of any other variety, for an example  
an office block or warehouse, etc. The premises 12  
includes a number of rooms 30, an exterior door 24,  
25 interior doors 28 connecting adjacent rooms 30, and a  
number of windows 26. Each room 30 is provided with an  
array of sensors, namely a motion/heat sensor 16  
arranged to fully cover the area of the respective room  
30; a contact sensor 18 in operative association with  
30 each door 24, 28, and operable to determine when the  
respective door 24, 28 has been opened or closed; and a  
combined contact/vibration sensor 20 in operative  
association with each window 26, and operable to

determine when the window 26 has been opened or closed. The movement/heat sensor 16 is preferably of the passive infrared (PIR) or ultrasonic type, although it will be appreciated that any other suitable equivalent 5 may be used. Each contact sensor 18 is preferably of the magnetic type, although again any other suitable alternative may be used. The plurality of contact/vibration sensors 20 are preferably a combination of magnetic and vibration sensors, although 10 the person skilled in art will understand that any alternative may be supplemented therefore. It will furthermore be understood that each room 30 shown, due to the shape thereof, requires only a signal movement/heat sensor 16 to cover the entire area of the 15 room 30. However, any given area to be monitored by the system 10 may require more than one motion/heat sensor 16, due to the shape and/or size of the area in question.

20 Thus, each of the above mentioned sensors 16, 18, 20 is connected to the processor 14, which constantly monitors the information provided by each sensor 16, 18, 20. The processor 14, rather than being composed of the conventional array of solid state electronic 25 components and switches, is operated by dedicated software which is capable of performing complex monitoring and programming tasks, as will be described hereinafter.

30 The processor 14 has programmed therein an exact map of the premises 12, and thus by virtue of the array of sensors 16, 18, 20, can accurately track the location and movement of an individual throughout the premises

12. Specifically, if an individual enters the premises  
12 via the exterior door 24, the associated contact  
sensor 18 triggers a signal which is read by the  
processor 14, thereby alerting the processor 14 to the  
5 possible entry of an individual at the exterior door  
24. The motion/heat sensor 16 in the room 30  
containing the exterior door 24 will then detect  
heat/motion of the individual, which is also registered  
by the processor 14, confirming the presence of an  
10 individual. If the individual then moves from the  
first room 30 to an adjacent room 30, via one of the  
interior doors 28, the associated contact sensor 18  
will generate a signal upon the respective interior  
door 28 being opened, immediately indicating to the  
15 processor 14 which room 30 the individual is proceeding  
into. However, if the interior door 28 is already  
open, the motion/heat sensor 16 in the room 30 to which  
the individual proceeds will then pick up the  
heat/motion of that individual, and thus the processor  
20 14 will in any event be aware that the individual has  
proceeded from one room 30 to the adjacent room 30.

In this way the processor 14 is constantly updated as  
to the present location of the individual. Thus if the  
25 processor 14 is programmed to permit the presence of  
one or more authorised individuals, the system 10 can  
remain armed and active, and track the presence of the  
authorised individual throughout the premises 12,  
without triggering an alarm. However, if an  
30 unauthorised individual then enters the premises 12,  
the system 10 will immediately detect their presence,  
and trigger a suitable alarm, as will be described in  
detail hereinafter. Therefore, in order to alert the

processor 14 to the presence and location of an authorised individual, a keypad 22 is provided, preferably adjacent the exterior door 24 as illustrated in figure 1, the keypad 22 again being in communication with the processor 14. On entering the premises 12, the authorised individual inputs a pre-set pin number or the like into the keypad 22, thereby alerting the processor 14 to the fact that the individual is authorised to be in the premises 12. The processor 14 tracks the movement of the authorised individual throughout the premises 12. It will therefore be appreciated that, if any other individual enters the premises 12, whether via the exterior door 24, or any of the windows 26, the system 10 would immediately detect their presence, which will not have been authorised by the input of a pin number into the keypad 22, and thus the system 10 will generate a suitable alarm.

20 In addition to this basic function, the system 10 is capable of performing more complex monitoring tasks, which will be more clearly understood by use of the following examples.

25 Example 1

The property 12 is initially empty, on arrival to the property 12 of the owner. Upon entering through the exterior door 24, the owner is prompted to enter their pin number or access code. Where more than one person lives in the property 12, each person may have their own personal code, for reasons which will become clear from the following examples. The owner enters their

code on the keypad 22 and closes the exterior door 24. The system 10 registers their entry, identity, and records the fact that they are on their own, through the use of the motion/heat sensor 16 in the first room 5 (hallway) 30. The person then proceeds to move through the property 12, with the system 10 tracking their movements at all times.

The person moves into the room 30 to the right of the 10 first room 30 and opens the window 26 therein. No alarm is triggered as the system 10 detects that the authorised individual is in that room 30 and beside the window 26 when it is opened. The system 10 writes this event to its system log. The person then proceeds 15 upstairs (not shown) to the main bedroom (not shown).

Unknown to the owner of the property 12, an unauthorised individual is approaching the property 12 through the rear garden (not shown). Seeing the open 20 window 26, the intruder attempts to climb through into the room 30. The system 10 is preferably set up to prohibit entry through any window 26, whether open or not, and therefore an alarm is immediately triggered.

25 Several events occur at this point. An audible alarm is immediately triggered, and a message is sent via a cellular link (not shown) forming part of the system 10, to a central monitoring station (not shown). The message contains details of the precise entry point, 30 and also of the fact that the owner of the property is currently in the main bedroom of the property 12. The Police are immediately notified by a secure computer link.

Depending on the particular configuration of the system 10, a voice message may be announced via any suitable means (not shown), giving the position and number of 5 intruders. This information will allow the owner to know where the intruders are located, thereby allowing them to take steps to protect their personal safety. The voice announcement will preferably sound only where there is an authorised individual already in the 10 property 12.

Referring briefly to figure 2, the system 10 may be provided with video/audio devices 32 suitably located within the property 12, which devices 32 would, upon 15 detection of an unauthorised individual, begin an audio/video recording of the intruder, tracking their movements throughout the property 12.

The security monitoring centre would dial into the 20 system 10 via the cellular link and monitor the locations of both the owner and the intruder. This information could then be continually fed to the Police, allowing them to be effective in their entry and containment of the intruder.

If, on hearing the alarm, the intruder vacates the 25 property 12, this event is also noted to the system log, and the audible alarm will quieten or cease. Monitoring by the security station will continue, and 30 phone contact be made by the station to the owner, in order to ensure their safety, and inform them of the location of the relevant authorities.

The audio/video images of the intruder may also be downloaded from the system 10, and provided to the Police or relevant authorities.

5 Example 2

In this example, the property 12 is occupied by two owners (person A and person B), and their dog, which is downstairs. The occupants of the property 12 generally 10 leave the interconnecting interior doors 28 open to allow the dog freedom to move throughout the property 12. The security system 10 knows that the occupants are at present in the main bedroom (not shown), and that the dog is downstairs.

15 Person B gets up at 4.30 a.m. to use the bathroom (not shown). The system 10 detects this movement. Person B then proceeds to open the window of the main bedroom. No alarm is triggered as the system 10 is tracking the 20 movement of person B, and notes them opening the window. At 5.30 a.m. an attempt is made to gain entry to the property 12 by an intruder. The intruder forces the glass (not shown) out of the window 26 of one of the downstairs rooms 30. The intruder does this in 25 such a way as to cause no vibration, thus ensuring that no signal is generated by the contact/vibration sensor 20 associated with the window 26. The dog is also asleep in this room 30 and is sleeping right below the window 26. The intruder is able to make entry into the 30 property 12 without waking the dog.

However, the motion/heat sensor 16 in the room 30 detects movement in the room. The system 10 is aware

of the dog sleeping under the window 26, and the motion/heat sensor 16 detects movement from that area.

At this point, the system 10 is not aware that the glass has been lifted out of the window 26. However,

5 the motion/heat sensor 16 picks up the fact that there are now two separate heat sources in the room 30, and immediately sounds the alarm.

The security monitoring actions taken are similar to  
10 the details in example 1 above.

### Example 3

The security system 10 continually monitors all  
15 occupants of the property 12, and tracks their movement and location. This ensures that occupants of the property are able to move freely within the property, opening doors 24, 28 and windows 26, without setting off the alarm.

20 Referring to the situation described in example 2 above, persons A and B may have a guest staying at the property 12. Their guest may wish to enter or leave the property 12 on their own. In order to allow this,  
25 without divulging their own personal codes, person A sets the security system to allow their guest to come and go as they please, by setting them up with a time delimited access code. This could be achieved, for example, as follows. Person A enters their own access code, and selects the "guest access code" option from  
30 the menu on the keypad 22. Person A inputs the guests desired pin (preferably twice) and then selects the "valid from/to" option from the menu. Person A sets

the valid date range for the guest access code as appropriate.

This facility ensures that it is not necessary to  
5 disable the continuous operation of the system 10,  
while allowing the guest to have access to the property  
12. This functionality may also be augmented by a, for  
example, "worker access code" which allows the user to  
input the specific hours of the day for which they want  
10 the worker code to be valid. If the worker/guest code  
is used outside of the valid hours/days then an  
immediate alarm will sound.

Example 4

15 For this example we assume that the property 12 has  
five occupants staying overnight. At 5.30 a.m. a minor  
fire is triggered by an electrical fault in one of the  
rooms 30. The fire is detected by the heat/motion  
20 sensor 16 (and optionally a smoke sensor (not shown))  
in the room 30 in question, the processor 14 triggering  
the following events. An audible alarm sounds within  
the property 12 to wake the occupants. The audible  
warning of, for example, "fire detected in dining room  
25 - occupants detected in bedrooms 1, 2 and 3" is  
sounded. An immediate signal is sent via the cellular  
connection to the central monitoring station informing  
them of the fire and of the whereabouts of the persons  
staying in the property 12. The audible warning  
30 continues to sound in the property 12 until all  
occupants have left the property, or until the fire is  
extinguished. Continuing warnings will sound should  
movement not be detected in one of the bedrooms, for

example, if one of the occupants were sleeping through the alarm. This would help warn the occupants that there were persons in the property 12 in potential danger. Once the rescue authorities have arrived at 5 the scene they are updated as to the whereabouts of the occupants of the property 12, thus allowing them to be effective in their efforts of maintaining safety.

The present invention is not limited to the embodiments 10 described herein, which may be amended or modified without departing from the scope of the present invention.

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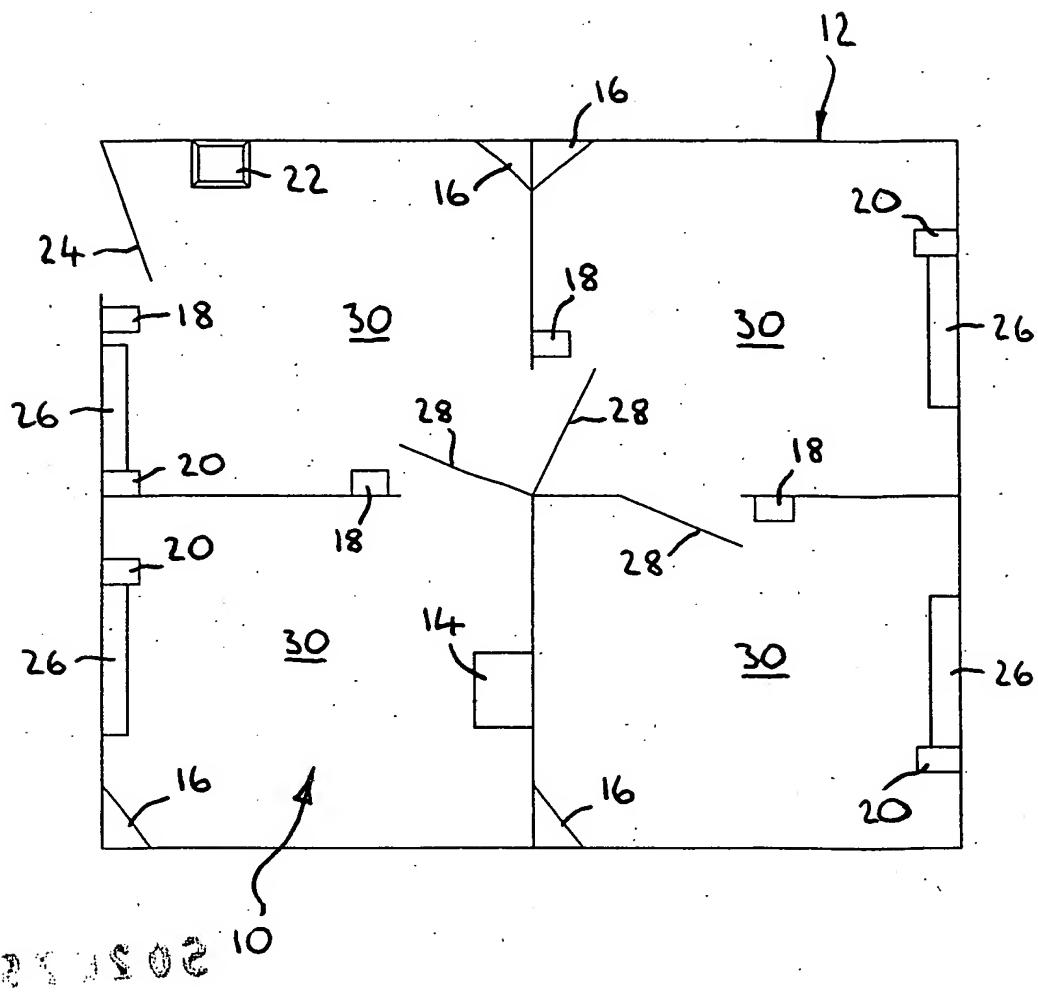


FIG. 1

2/2

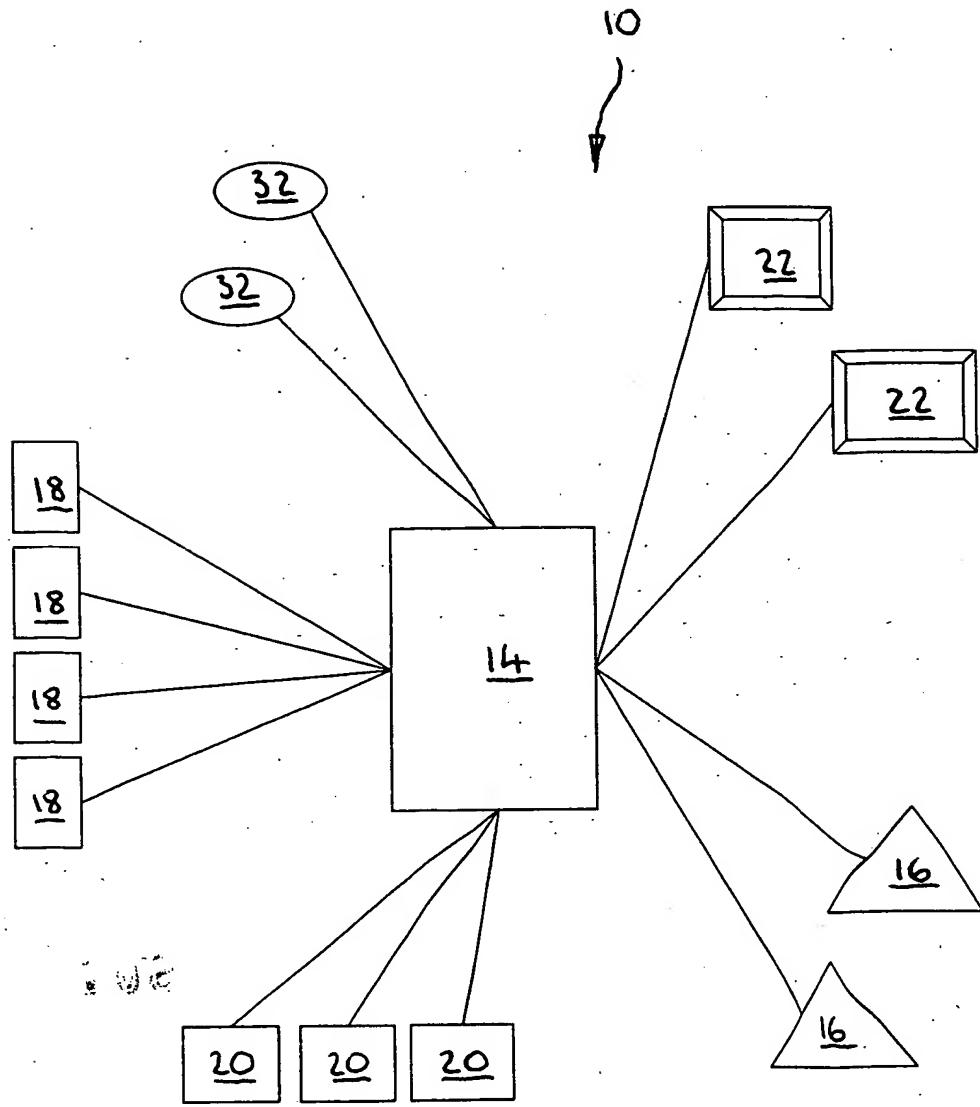


FIG. 2